Winslow-Lindbergh Regional Airport

Winslow, Arizona

EXECUTIVE SUMMARY

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ENGINEERS AND PLANNERS

Nicholas J. Pela & Associates
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the Southwest Aviation Services Group

WINSLOW-LINDBERGH REGIONAL AIRPORT

WINSLOW, ARIZONA

COMPREHENSIVE AIRPORT MASTER PLAN 1998

EXECUTIVE SUMMARY

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WINSLOW-LINDBERGH REGIONAL AIRPORT
WINSLOW, ARIZONA

COMPREHENSIVE AIRPORT MASTER PLAN - 1998

EXECUTIVE SUMMARY

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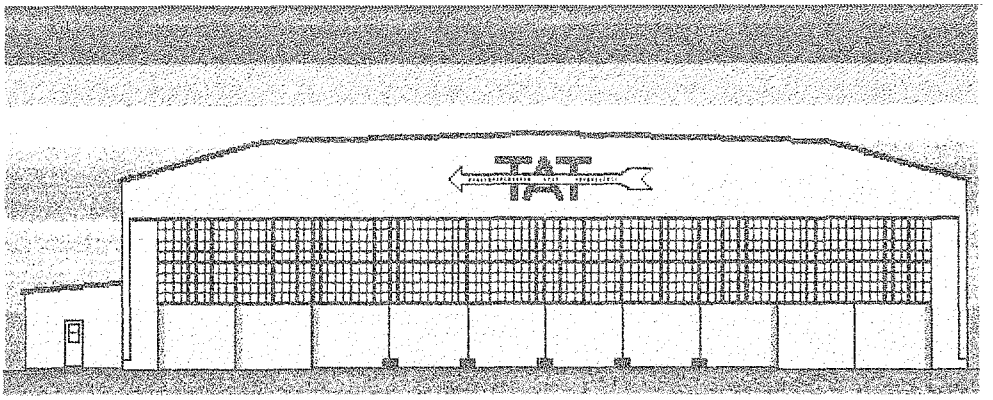


WINSLOW-LINDBERGH REGIONAL AIRPORT

Winslow, Arizona

AIRPORT MASTER PLAN - 1998

EXECUTIVE SUMMARY

INTRODUCTION

In July of 1997, the joint-venture firms of Gannett Fleming, Inc. and Nicholas J. Pela & Associates were retained by the City of Winslow, Arizona to prepare a comprehensive Airport Master Plan Study for the Winslow-Lindbergh Regional Airport (which was then called the Winslow Municipal Airport).

In the Study, analysis was made of the factors affecting the future development of the airport, and recommendations were presented which, when implemented, will assure that the airport will develop consistent with the demand placed upon it.

The Study focused on three main points:

- To provide recommendations for cost-effective repair and rehabilitation of the existing airport to assure a safe operating environment, and provide an attractive location for new business development.
- To provide realistic recommendations for future airport improvement which will assure that the airport will accommodate its future demand, in terms of aviation safety and capacity as well as future commercial growth.
- To identify realistic alternatives for future development, to provide a flexible planning tool to serve potential niche markets for the airport.

The twenty-year planning period of the Study covers calendar years 1997 through 2018.

Project Approach - the PAC Process

The master planning process used the "Planning Advisory Committee" (or PAC) team approach. PAC team members are persons who are interested in the outcome of the airport planning process, and who are willing and able to commit the time and resources necessary to provide timely review of all information submitted by the Consultant. Although all PAC team members need not have an aviation background, some aviation/airport knowledge and interest is helpful.

Review of the Master Plan documents was undertaken on an ongoing basis during the project term. Each PAC member began with an empty notebook (the PAC Workbook). As each phase of the Plan was completed by the Consultant, Working Papers are prepared and copies were distributed to each PAC member for review. PAC meetings were scheduled at key points in the process in order to discuss and ultimately approve each planning element Working Paper, as submitted by the Consultant.

As each progressive element of the planning document was completed by the Consultant team and approved by the PAC, it became a part of the PAC Workbook. When all elements of the work were complete, the PAC Workbook was approved and became the final Master Plan.

Public Involvement

Each of the scheduled PAC Meetings was advertised as a Public Meeting, so that they could function as a vehicle to disseminate information to the public, and as a source of public input. At each of these meetings, the Consultants presented information regarding the progress, findings and recommendations of the studies, and input was solicited from the PAC and any members of the general public.

The Consultant also provided an Internet web site containing summary information on the planning process. Public comment was solicited from this site via E-mail. No comments were received. *(An electronic version of this Executive Summary has been published on the Internet - the address is listed below.)*

Although little interest by the general public was observed during the formal PAC process, the broad cross section of experience of the PAC members assured a valid representation of the local populace.

The Winslow-Lindbergh Regional Airport public informational Web Site address is:
http://members.aol.com/airport102/inw.htm

AIRPORT HISTORY

What is now known as Winslow-Lindbergh Regional Airport was originally called Barrigan Airport. It was constructed in 1929 by Transcontinental Air Transport (TAT) to serve as one of twelve stopover points for its new transcontinental service. The airport originally consisted of three unlighted asphalt runways, the present Terminal Building and Hangar, and an aircraft parking apron.

Winslow's airport played an important role in the early days of aviation, functioning as a pioneering base for transcontinental airline travel and air mail service, as well as a training base for World War II pilots. In the years after the war, Winslow continued to function as a regional airline center, and also became a busy general aviation facility.

Today, the Winslow-Lindbergh Regional Airport functions as a General Aviation facility, providing two paved and lighted runways, instrument approaches, and both 100LL and Jet-A aviation fuel service. Current hours of operation are from 7:00am until 5:00pm daily.

EXISTING FACILITIES AND SERVICES

The primary runway, Runway 11-29, is 7,102' X 150' with asphalt pavement and pilot-controlled lighting. Visual Approach Slope Indicators (VASI) have been installed on both ends of the runway. Runway 11 is equipped with Runway End Identifier Lights (REIL).

Runway 4-22 is 7,498' X 150' with asphalt pavement and pilot-controlled lighting. Runway 22 is equipped with VASI and REIL.

Automated weather is available from the on-site ASOS on 118.875, or by telephone at (520) 289-0134.

A VOR or GPS RWY 11 nonprecision instrument approach is available. This approach provides straight-in descent minimums to 400 feet AGL (5,320' MSL), with visibility minimums of 1 mile for Category A and B aircraft, and 1¼ miles for Category C and D aircraft.

The U.S. Forest Service has a fire-control base on the airport, with intensive seasonal operations by modified Douglas DC-6 and Lockheed P-3 Orion class fire suppression bomber aircraft.

The airport is served by a Very High Frequency Omni Range / TACAN (VORTAC) station, which is located 4.3 miles northwest of the field. The VORTAC's frequency in 112.6.

There is presently no Fixed Base Operator (FBO) on the airfield. The closest aircraft repair services are located at Flagstaff, about 60 miles to the west on Interstate 40, and

Holbrook, about 35 miles to the east.

The airport Terminal Building includes a restaurant.

Rental cars are available at the airport with a prior reservation.

CONDITION OF EXISTING FACILITIES

The chart below is a summary of the condition of the existing major airport facilities. The condition of the facilities was determined by engineering and architectural investigations and surveys conducted during July of 1997. Specific investigations were made to determine the condition of the airport's existing pavements, buildings, drainage, fencing, and utilities.

The investigations included research of available record plans and documents as well as field surveys. Field surveys were conducted in order to establish horizontal and vertical control, as well as to accurately locate major airport improvements, structures and topographic features.

In the following narrative, each facility has been assigned a general condition rating of "Good", "Fair", or "Poor". A facility rated as "Good" may be assumed to be substantially adequate throughout the 20-year time frame of this study, assuming only normal maintenance. A rating of "Fair" means that the item will probably require major upgrade or replacement at some time during the planning period, but is at least serviceable at the present time. A rating of "Poor" indicates that the item is not adequate for its intended use at the present time.

AIRPORT FACILITIES CONDITION SUMMARY
Winslow-Lindbergh Regional Airport - July, 1997

FACILITY	Good	Fair	Poor
Runway 11-29 Pavement			
Runway 4-22 Pavement			
Runway 17-35 (Abandoned) Pavement			
Aircraft Parking Aprons Pavement	←		→
Runway 11-29 Parallel and Connector Taxiways			
Runway 4-22 Parallel and Connector Taxiways			
Airport Access Roads & Auto Parking Pavement			
Terminal Building			
T.A.T. Hangar			
Electrical Equipment Vault Building			***
Runway 11-29 M.I.R.L.			***
Runway 4-22 M.I.R.L.			***
Runway 11 and 22 REIL			
Runway 11, 29 and 22 VASI			
Apron Floodlighting			
Rotating Beacon			
Taxiway Guidance Signs			***
Storm Drains, Culverts & Catch Basins			
Property Line Fencing		←	→
Terminal Area Fencing		←	→
Fuel Storage/Delivery & Service Apron			

← → Indicates an approximate range of condition.

*** *Runway lighting for Rwy 11-29 & 4-22, the electrical vault, and Taxiway guidance signs are being reconstructed concurrent with the preparation of the Master Plan.*

AIRPORT SERVICE AREAS

In determining the service area for the Winslow-Lindbergh Regional Airport, it is important to consider the airport's various roles within the regional airport system. While many of the airport facilities are currently designed to accommodate scheduled commercial service, there are no current scheduled airline operations. The present role of the Winslow airport is service to the general aviation community, which includes business travel, sport aviation, and training, as well as private use of light aircraft.

Current FAA planning guidelines for airport siting indicate that a general aviation airport should be located no more than thirty minutes driving time from business, charter and private aircraft users. This is a valid assumption, since the main advantage in flying is the savings in long distance travel time.

In theory, an airport service area for a particular role or function extends halfway to nearby airports which are capable of serving the same function.

Service areas for scheduled air carriers may typically be much greater (or smaller) in area than for general aviation users, and depend highly upon the level of carrier providing service on specific routes, the condition of the local and national economy and airline fare schedules, as well as many conditions which may be unique to specific locations, such as availability of existing ground transportation options and public sentiment toward the airline providing service.

General Aviation Service Area

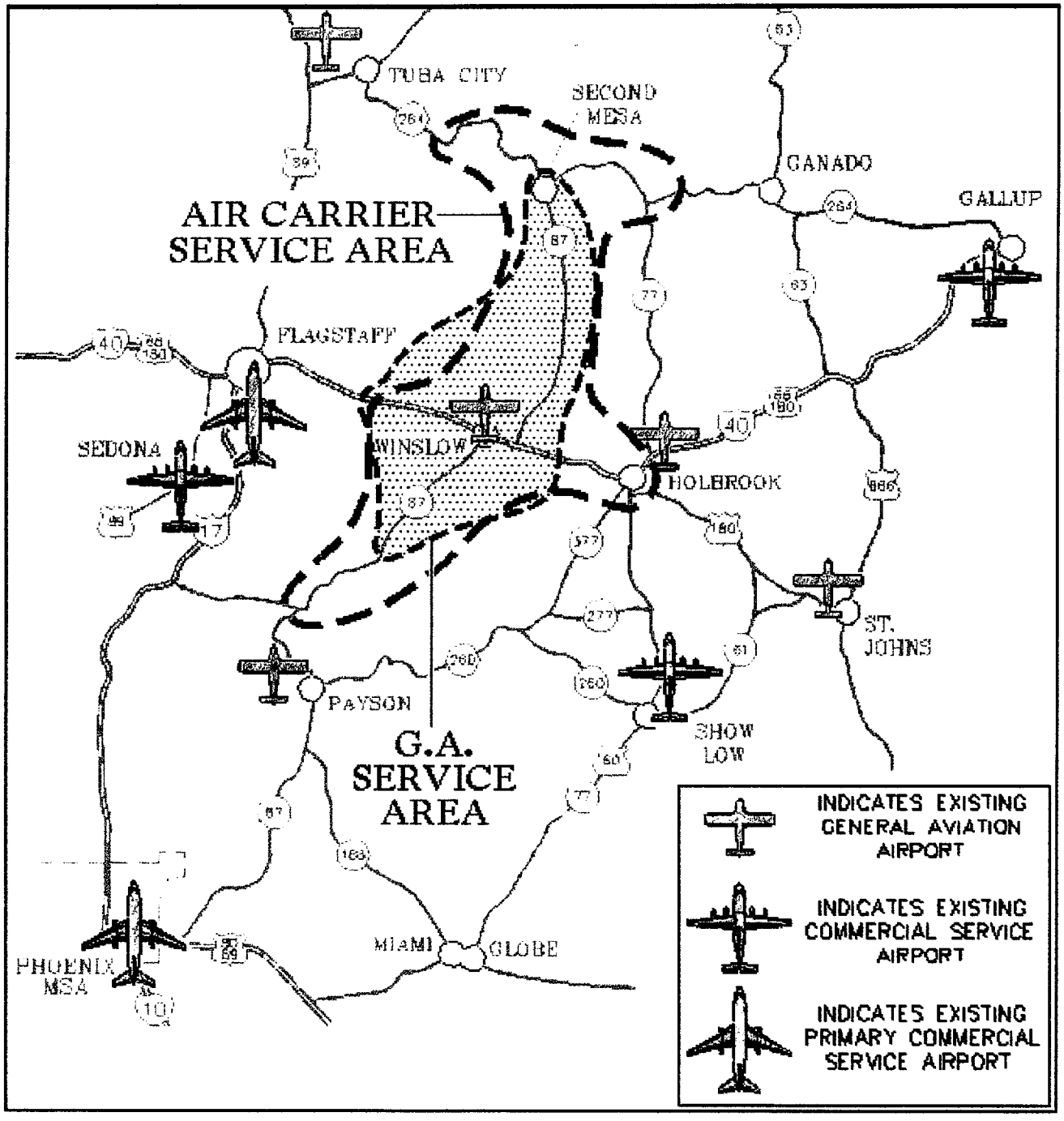
In determining the airport's general aviation service area, it was assumed that aircraft owners choose to base their aircraft at the airport which is closest to their residence, which will provide the level of services required by their particular need. All other factors being equal (such as the condition of the airports' facilities) the determining factor in this decision is almost always the length of paved runway which is required by the type of aircraft to be operated.

Because the area surrounding the City of Winslow is sparsely populated, the general aviation service area is limited to an area that encompasses the city limits and extending along Interstate 40 to points approximately halfway to Flagstaff and Holbrook. The approximate General Aviation Service Area for Winslow is illustrated on the map below.

Air Carrier Service Area

The theoretical service area for scheduled air carrier operations, as illustrated below, was developed by connecting equidistant points (based on approximate driving time) between Winslow and the closest competing airports currently providing scheduled service. These are Flagstaff/Pulliam Field (classified as a Primary Commercial Service Airport) to the west, Page, AZ to the north, Gallup, NM to the east, and Show Low, AZ to the southeast. The closest of these is Flagstaff, which is about 60 miles away.

GENERAL AVIATION & THEORETICAL AIR CARRIER SERVICE AREA MAP FOR WINSLOW-LINDBERGH REGIONAL AIRPORT



The actual air carrier service area will vary with changes in the economy and other local and regional factors. For example, at the present time most travelers residing in Winslow who require long haul airline service will most probably drive to Phoenix to make their flight, rather than drive a lesser distance to Flagstaff for a short haul connector flight. This is primarily an economic decision, based upon the currently available levels of service and fares. It is assumed that this would also affect the passenger volume, if commuter service were available at Winslow.

The service area presented in the illustration above, then, represents the *theoretical maximum achievable air carrier service area* for Winslow, under assumed prime conditions, if limited only by geographic constraints.

AVIATION ACTIVITY FORECASTS

As part of the Master Plan process, the Consultant team prepared estimates of aviation activity at the Winslow-Lindbergh Regional Airport. It is estimated that there are currently about 12,800 operations (landings and takeoffs) per year.

There are currently 10 light aircraft based at Winslow. The Consultant's research indicated that this level has declined from 37 aircraft in 1979 and 21 in 1987. It is believed that this is a reflection of the downturn in general aviation activity nationwide. This national trend is in the process of improving with the recent passage of improved product liability reform legislation coupled with a general improvement in the national economy.

The City of Winslow, with federal and state financial aid, will be improving the existing facilities in order to provide a safer and more attractive environment. These improvements may foster a rapid increase in activity at the airport, if coupled with an aggressive business development and marketing plan by the City. In the short term, operations may increase to about 18,700 annual operations.

The forecasts prepared in the Study include both a "Low-Range" and a "High-Range" projection for the 20-year planning period. The Low-Range projection assumes that activity will increase at a moderate rate of growth from the estimated actual level of 12,800 annual operations. The High-Range projection assumes rapid initial growth in business related activity, then a moderate increase through the remainder of the planning period.

The projected increase in activity through the project planning period is summarized in the chart below.

Aviation Activity Forecasts
Winslow-Lindbergh Regional Airport 1997-2017

	Current 1997 Estimate	After Initial Improvement	Low-Range 2017 Estimate	High-Range 2017 Estimate
Based Aircraft	10	10-16	17	24
Total Annual Operations	12,811	18,700	22,000	40,000

U.S. Forest Service Operations

The U.S. Forest Service maintains a fire-control operations base at the Winslow airport, flying modified piston and turboprop powered aircraft for aerial application of forest fire suppressant chemicals.

Over the past ten years, Forest Service activity has averaged 278 operations annually. Highest use was in 1996 (668), and the lowest use was in 1992 (32). There were 68 operations conducted during the 1997 fire season.

It is projected that Forest Service activity will continue to vary, but that this activity may increase to over 500 annual operations in the future, depending upon weather conditions and the range of future missions.

Critical Aircraft

The "critical" or "design" aircraft for an airport is defined as that aircraft (or group of aircraft) whose dimensional and/or performance characteristics are the basis for selection of design criteria. The critical aircraft must account for at least 500 annual operations.

The verifiable critical aircraft currently using the Winslow facilities is a mix of business jets, which together account for nearly 700 annual operations. Projections indicate that activity by this type of airplane may increase to over 3,900 annual operations by the year 2017.

The Winslow-Lindbergh Regional Airport has played an important role in the history of aviation in the Southwest. Two existing buildings in the airport Terminal Area provide a glimpse into the past – the T.A.T. Hangar and the Terminal Building. Both of these structures were constructed in 1929 by Transcontinental Air Transport (T.A.T.), the precursor to Trans World Airways (TWA). The buildings were part of a system of airports that were meant to serve as stopover points for the first transcontinental airline route, an important milestone in the development of air commerce in the U.S.

Although both the Hangar and the Terminal would probably qualify for inclusion on the National Register of Historic Places, it was decided that only the Hangar would be preserved. The Terminal is located such that it is an obstruction to the existing parallel taxiway. Future development plans call for its removal.

THE T.A.T. HANGAR

AIRPORT FACILITY REQUIREMENTS

Based on the projected activity forecasts developed as a part of the Master Plan, and on identified potential .niche. markets for the airport, a schedule of recommended improvements were prepared.

The schedule includes recommendations for improvements to meet the Short Term (2001-2005), and the Ultimate (2006-2018) demand. Recommendations for action in the Immediate Term (1998-2000) were also included when a deficiency was defined which requires immediate correction for reasons of safety, or when a feature was found to be not able to fulfill its design function at the present levels of demand.

Summary tables for recommended Immediate, Short Term and Ultimate development are included below and on the following pages.

IMMEDIATE TERM DEVELOPMENT PLAN
Winslow-Lindbergh Regional Airport 1998-2000

Runway 11-29	Remove or mark all obstructions to FAR Part 77 airspace (see Airport Layout Plan).
Taxiways	Install taxiway guidance and informational signage to restrict use of the Runway 11-29 parallel taxiway to no greater than ARC B-II aircraft in the area of the Terminal Building.
	Reconstruct connector taxiways adjacent to the Terminal Area Apron.
Aprons	Reconstruct Terminal Area Apron pavements, including the PCC apron and asphaltic concrete ramp adjacent to the Terminal Building and T.A.T. Hangar (remove portion of existing apron to provide separation between U.S.F.S. and general aviation operations - see Airport Layout Plan).
	Construct new general aviation aircraft parking apron (per Airport Layout plan).
Hangars	Designate adequate hangar development land to allow for the High-Range projected ultimate demand (24 based aircraft).
Rotorcraft Facilities ...	Designate a rotorcraft landing area on an existing apron, and mark as a 48' x 48' visual Touchdown and Liftoff Area (TLOF).

SHORT TERM DEVELOPMENT PLAN
Winslow-Lindbergh Regional Airport 2001-2005

Aprons	Rehabilitate the South General Aviation Apron pavements.
Lighting/Visual Aids ..	Install Medium Intensity Taxiway Lighting (MITL) on Runway 11-29 and 4-22 parallel taxiways and connector taxiways.
	Install a Precision Approach Path Indicator (PAPI) on the Runway 4 approach end.
Buildings	Renovate the T.A.T. Hangar under an Historic Preservation Grant.
	Develop a new 1,750 square foot General aviation Terminal Building.
	Designate a site for potential future development of a 3,400 square foot Commuter Airline Terminal.

ULTIMATE TERM DEVELOPMENT PLAN
Winslow-Lindbergh Regional Airport
2006-2018
Page 1

Runway 11-29 ..... Extend runway pavement as much as 2,100' to the northwest to serve the actual ultimate critical aircraft. Relocate the Runway 29 threshold 515' to the northwest. *(Requires preparation of an Environmental Assessment).*

Strengthen pavement to serve the ultimate critical aircraft (assume 60,000 pound SWG ARC C-III).

Provide an instrument approach to lower than 3/4 mile for Runway 11 (assume a Differential Global Positioning System approach - DGPS), and nonprecision approach to as low as 3/4 mile for Runway 29.

Mark pavement for "precision" approach.

Roads ..... Relocate Industrial Park Road (6,500' of new construction) concurrent with Runway 11-29 extension.

Runway 4-22 ..... Strengthen pavement to serve the ultimate critical aircraft (assume a critical-design 135,000 pound ARC C-III aircraft).

Provide a straight-in instrument approach to greater than 3/4 mile visibility.

Mark pavement for "nonprecision" approach.

ULTIMATE TERM DEVELOPMENT PLAN
Winslow-Lindbergh Regional Airport
2006-2018
Page 2

Taxiways	Widen Runway 11-29 and 4-22 parallel taxiways and connector taxiways from 35 feet to 50 feet to serve ARC C-III aircraft (increase runway/taxiway centerline offset from 325 feet to 332.5 feet).
	Secure a design waiver from the FAA to allow use of the Runway 11-29 and 4-22 parallel taxiways by ARC C-III aircraft (a 332.5' offset from the runway centerline would be provided after widening; a 400' offset is required by AC 150/5300-13).
	Extend the Runway 11-29 parallel taxiway to serve the ultimate 2,100' runway extension.
Lighting/Visual Aids ..	Replace Runway 11, 29 and 22 Visual Approach Slope Indicators (VASI) with Precision Approach Path Indicators (PAPI).
	Install Medium Intensity Approach Lighting System with Runway End Identifier Lights (MALSR) on the new Runway 11 approach and extend MIRL.
	Replace or renovate Runway End Identifier Lights (REIL) on Runway 22.
Buildings	If commuter airline service is established at Winslow in the future, a separate 3,400 square foot Commuter Airline Terminal should be developed.
Auto Parking	Expand the automobile parking area to accommodate 46 cars.
Rotorcraft Facilities ...	Construct a new 48' x 48' paved, lighted and marked Touchdown and Lift-off Area (TLOF), with an 86' x 110' Final Approach and Takeoff Area (FATO).
Land Acquisitions	Acquire 117.5 acres in fee and 38.6 acres in easements for ultimate extension of Runway 11-29 to the northwest.
	Acquire 26 acres of avigation easements for relocation of the Runway 29 threshold to the northwest.

DEVELOPMENT ALTERNATIVES

The Winslow airport has an established runway and taxiway system, with few areas in need of modification. The only obvious element that may require modification is the bend in the Runway 11-29 parallel taxiway near the existing Terminal Building. This bend was apparently designed to maintain a clear 131' wide taxiway Object Free Area (OFA) for ADG II aircraft around the Terminal Building (the design criteria for the ARC B-II classification of aircraft was probably used when the taxiway was designed).

The selection of the ARC B-II basis of design for the taxiway bend was probably appropriate at the time of construction. However, there is the potential for a significant increase in use by larger and faster aircraft in the ARC B-III through C-III classifications in the future, which would require a greater offset distance between the taxiway and the building.

Several years ago, the Terminal Building was actually damaged by an aircraft that left the pavement, striking the building with its wingtip.

The recommendations included in the Master Plan indicate that the affected portion of the parallel taxiway should be restricted to use by aircraft of less than 79' wingspan and 121' approach speed (ARC B-II or less), or reconstructed to allow operations by larger aircraft.

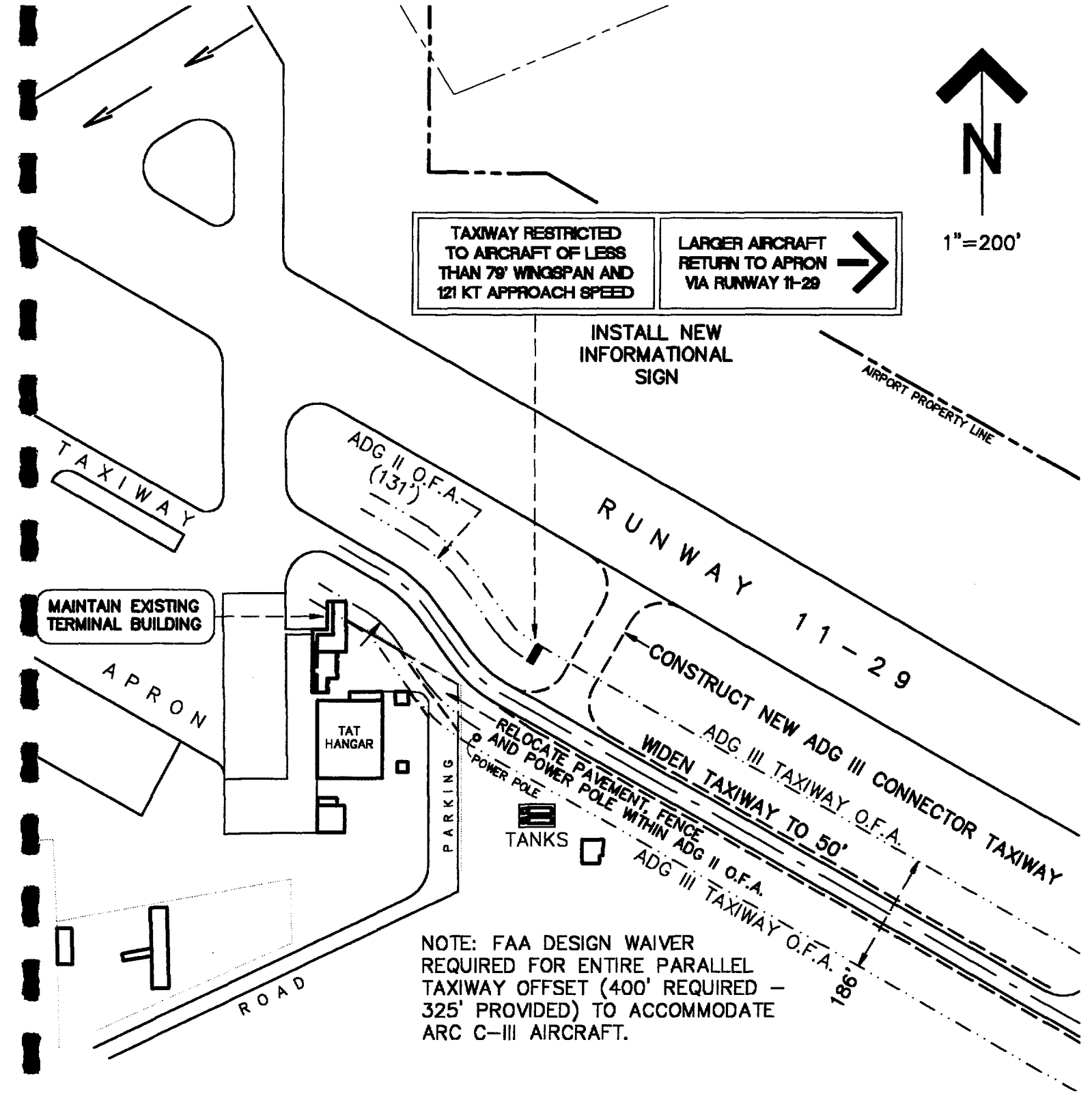
The Master Plan process explored several alternatives to mitigation of the potential impacts of use of this taxiway by large aircraft. These alternatives are illustrated in Figures 5-1 through 5-5, on the following pages.

Three factors were considered when evaluating the five development alternates. These are (in descending order of importance):

- Safety of operations;
- Preservation of the historic Terminal Building; and
- Economic feasibility.

After evaluation. The Consultant's recommendation to the Planning Advisory Committee (PAC) was to select Alternative 1. This option allows for the preservation of the Terminal Building, while retaining an acceptable balance of operational and economic considerations.

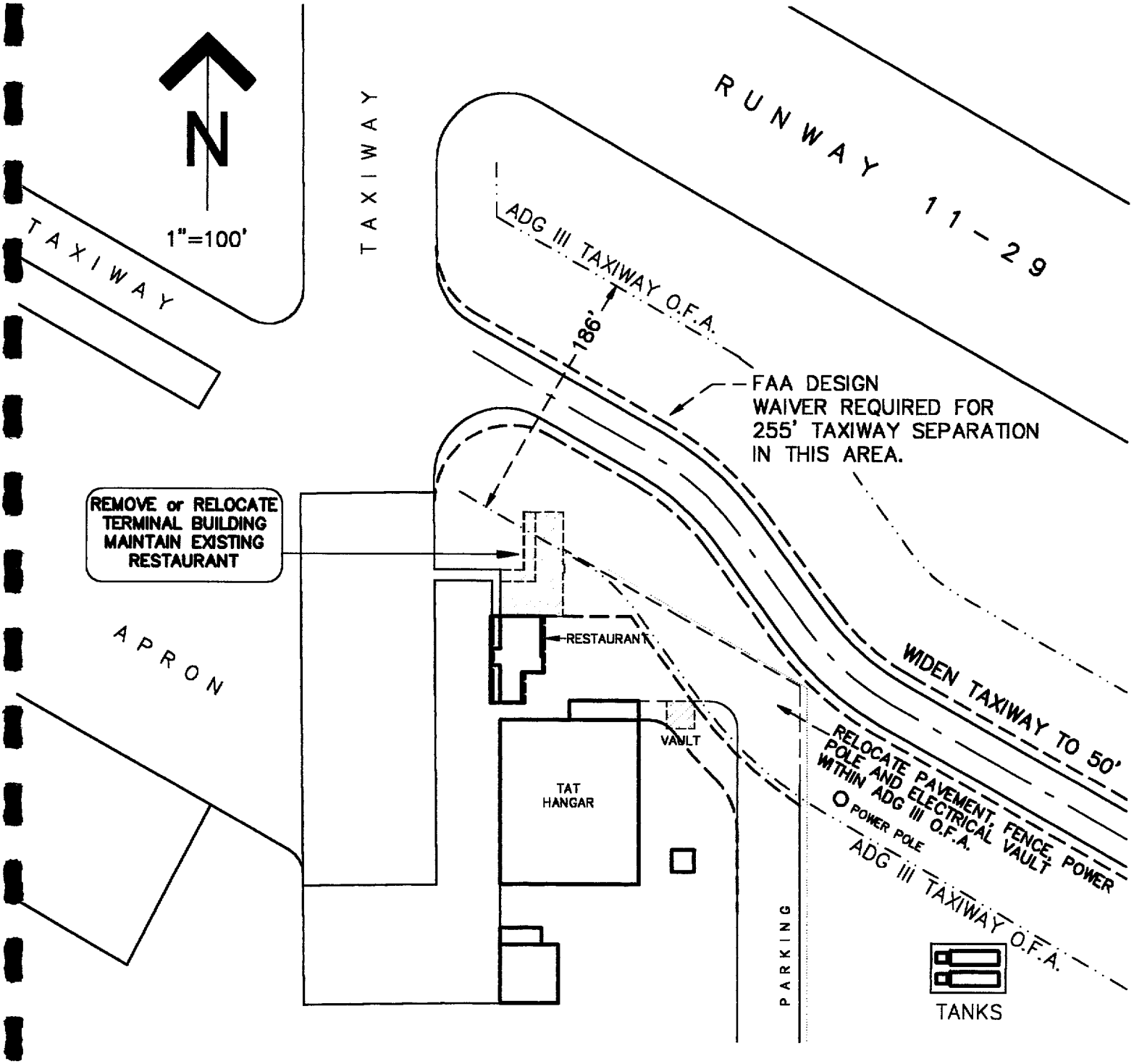
The Planning Advisory Committee (PAC) selected a combination of Alternates 1 and 5. With the selected plan, the Terminal Building will be maintained in the short term and use of the Runway 11-29 parallel taxiway will be restricted to aircraft smaller than ADG III, as is indicated by Alternate 1 (Figure 5-1). However, in the future the parallel taxiway will be straightened as indicated in Alternate 5 (Figure 5-5), necessitating demolition of both the Terminal Building and the adjoining restaurant.



Winslow-Lindbergh Regional Airport
Master Plan 1998
DEVELOPMENT ALTERNATE 1

Revised: 12/19/97

FIGURE 5-1

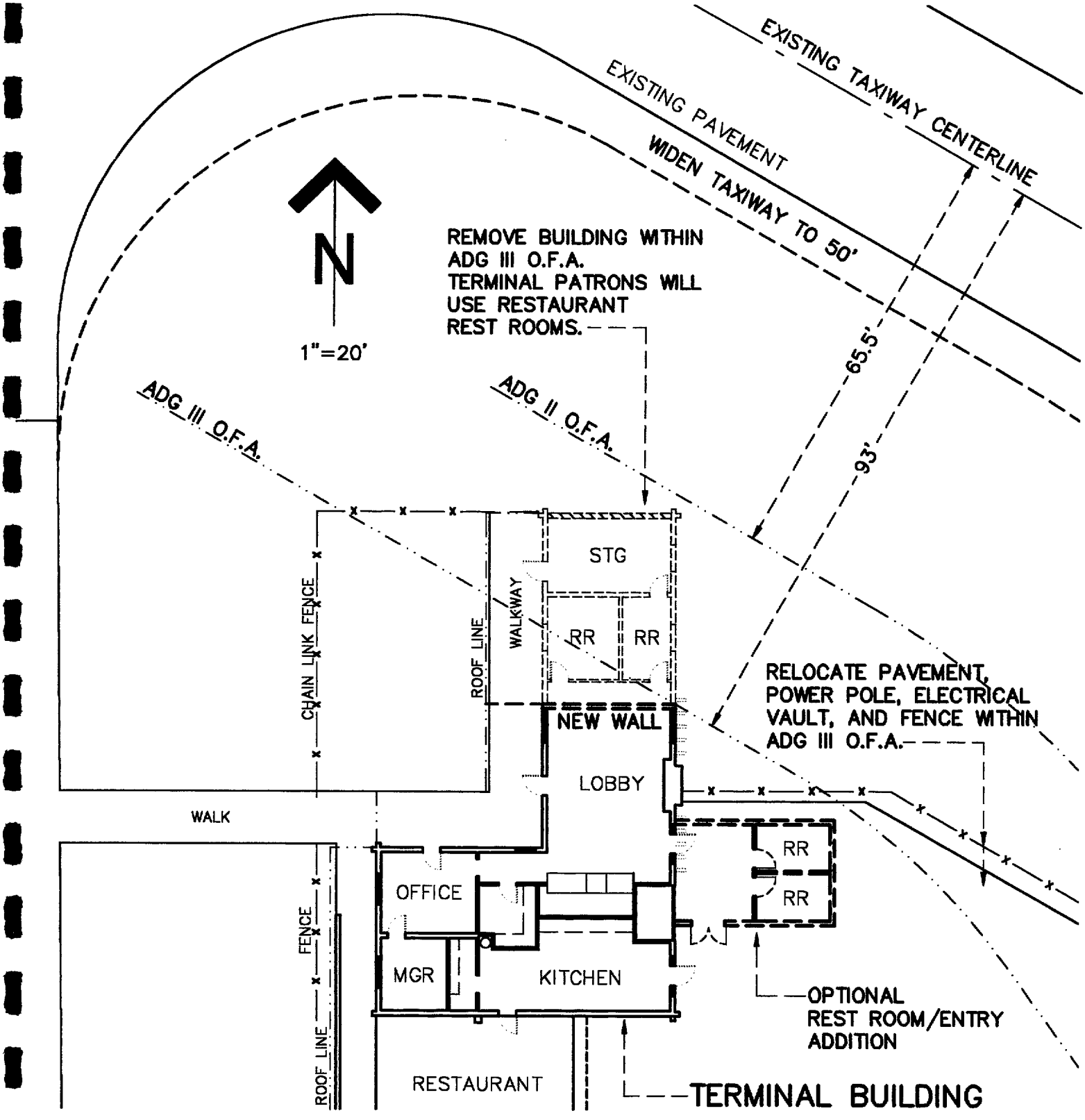


NOTE: FAA DESIGN WAIVER REQUIRED FOR ENTIRE PARALLEL TAXIWAY OFFSET (400' REQUIRED – 325' PROVIDED) TO ACCOMMODATE ARC C–III AIRCRAFT.

Winslow-Lindbergh Regional Airport
Master Plan 1998
DEVELOPMENT ALTERNATE 2

Revised: 12/19/97

FIGURE 5-2

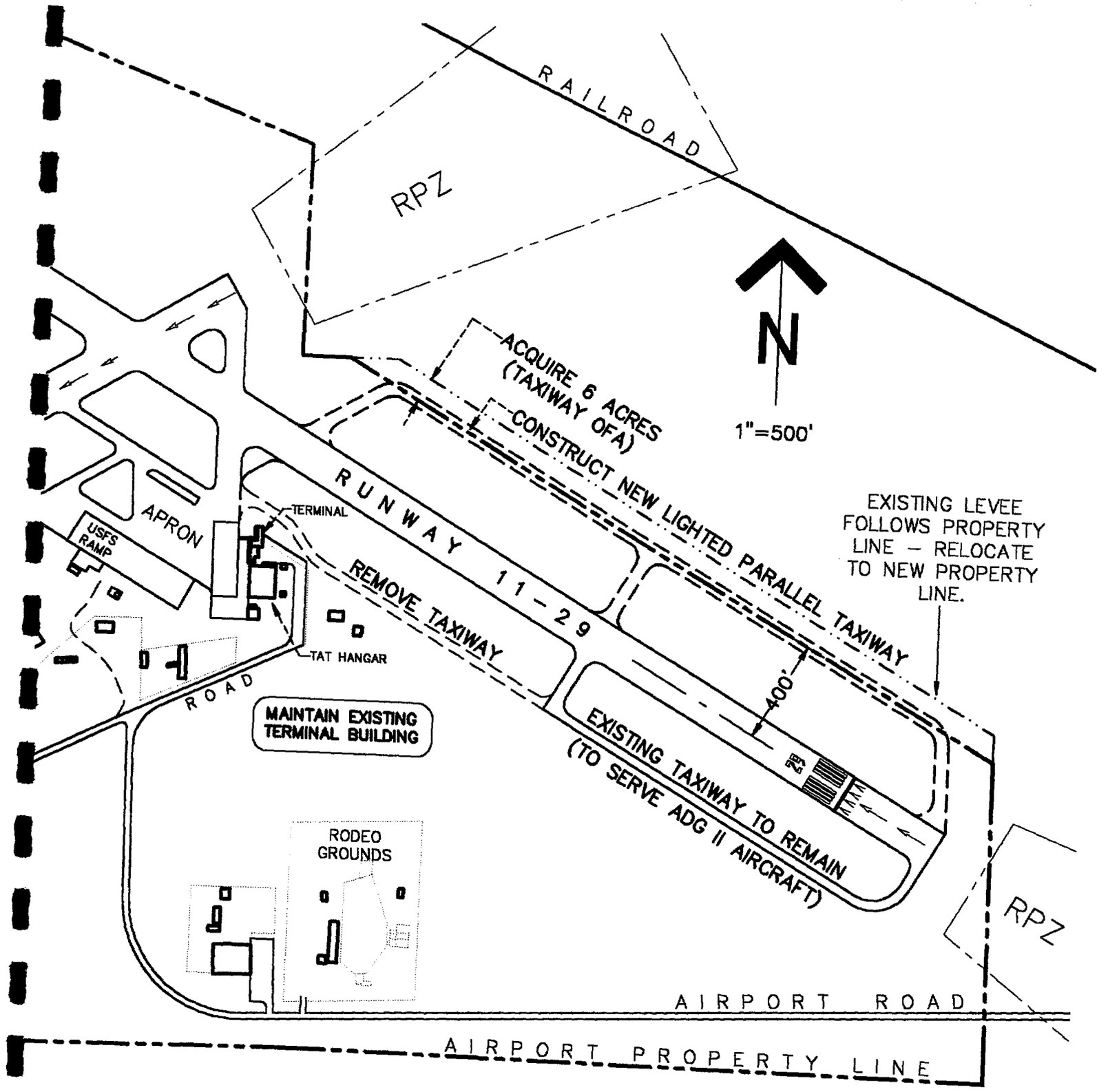


Winslow-Lindbergh Regional Airport Master Plan 1998

DEVELOPMENT ALTERNATE 3

Revised: 12/19/97

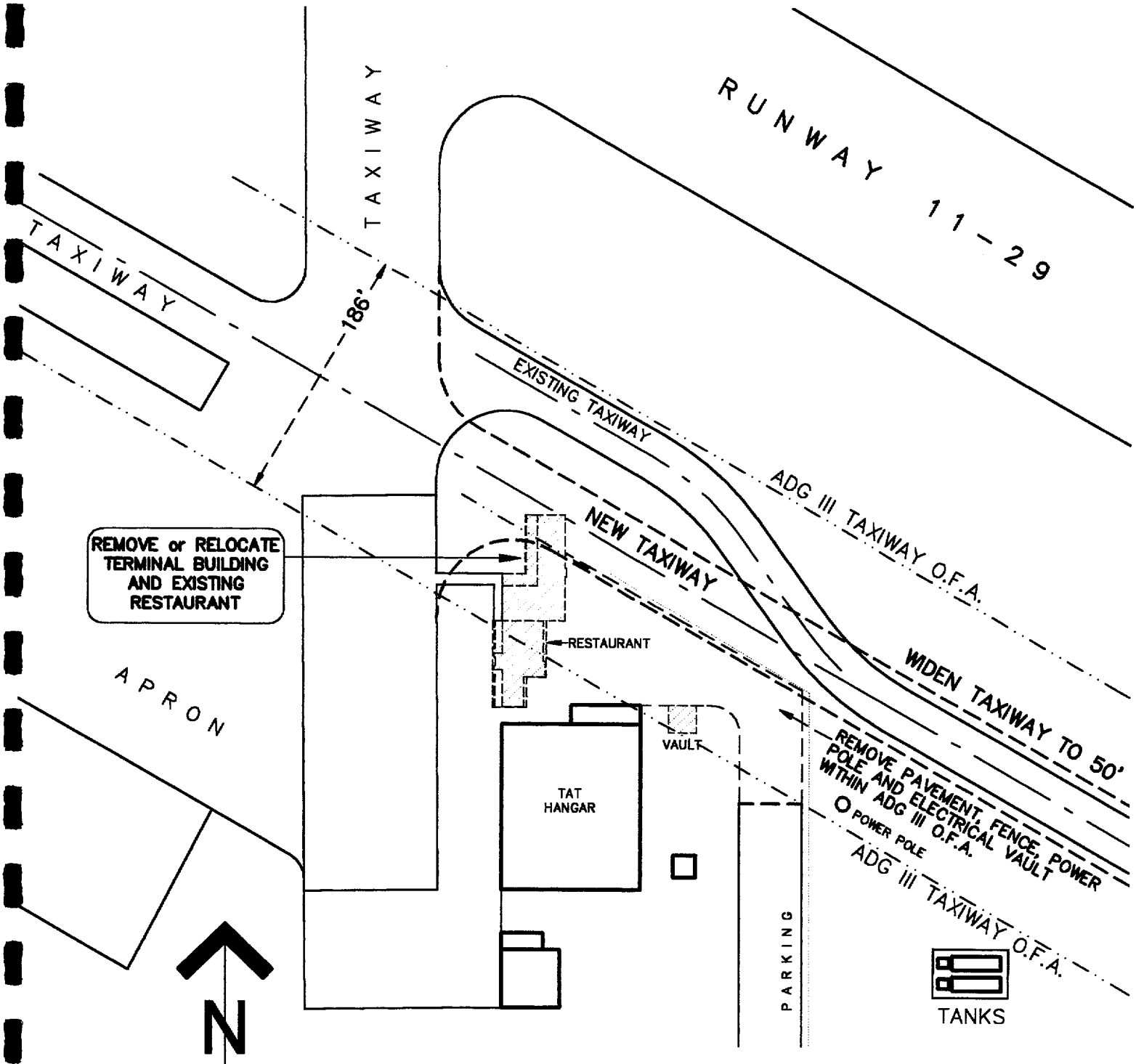
FIGURE 5-3



Winslow-Lindbergh Regional Airport
Master Plan 1998
DEVELOPMENT ALTERNATE 4

Revised: 12/19/97

FIGURE
5-4



NOTE: FAA DESIGN WAIVER REQUIRED FOR ENTIRE PARALLEL TAXIWAY OFFSET (400' REQUIRED – 325' PROVIDED) TO ACCOMMODATE ARC C–III AIRCRAFT.

Winslow-Lindbergh Regional Airport
Master Plan 1998
DEVELOPMENT ALTERNATE 5

Revised: 12/19/97

FIGURE 5-5

ENVIRONMENTAL FACTORS

The National Environmental Policy Act (NEPA) requires that all new airport construction be evaluated in terms of possible environmental impacts. Thus, it is important in the Master Planning process to identify the environmental issues which may need to be addressed prior to airport development.

Federal actions fall into one of three categories:

- Categorical Exclusions;
- Actions normally requiring an Environmental Assessment (EA); and
- Actions normally requiring an Environmental Impact Statement (EIS).

In general terms, actions categorically excluded are those actions which are found to have no potential for significant environmental impact. There are many actions which fall into this classification, including reconstruction of existing pavements and other infrastructure, upgrade of airfield lighting systems, fencing and roadway construction, building construction, and landscaping.

Actions normally requiring an Environmental Assessment are those which have been found by experience to sometimes have significant environmental impacts. Actions being considered for the future at the Winslow airport which may require an EA include:

- Extension of Runway 11-29;
- Straightening of the Runway 11-29 parallel taxiway (dependent on the disposition toward the Terminal Building as an Historic Building), and;
- Installation of a Medium Intensity Approach Lighting System (MALSR).

Based on the findings of the environmental research performed as a part of the Master Plan, the Environmental Assessment for these projects should address Airport Noise impacts, potential impacts to Historic Resources (Terminal Building), Air Quality impacts, potential impacts to Endangered or Threatened Specieis, and Light Emissions as critical issues.

Actions determined to have significant impacts during preparation of the Environmental Assessment will be required to be addressed by an Environmental Impact Statement (EIS).

The preparation of the Environmental Assessment is the responsibility of the airport sponsor. Based upon the results of the Environmental Assessment, the FAA would either prepare an Environmental Impact Statement (EIS) or would issue a "Finding OF No Significant Impact" (FONSI).

Federal regulations require that a sponsor seeking a grant for airport improvements must prepare and submit an Airport Layout Plan, showing detailed information

regarding the existing and proposed facility, along with an Environmental Assessment prepared in accordance with FAA Order 5050.4, if an assessment is required.

There are several proposed projects that will require preparation of an Environmental Assessment and issuance of a FONSI. These are:

1. Extension of Runway 11-29.

2. Straightening of Taxiway Parallel to Runway 11-29 (dependent on disposition toward Terminal Building as an Historic Building).

3. Installation of a MALSR.

Since all of these projects, if pursued, may be done within the same short period of time, it would be economical to cover all three projects within one Environmental Assessment.

The Environmental Assessment for these projects should address all applicable items listed in FAA Order 5050.4. Based on this environmental overview, the critical issues appear to be:

- Airport Noise (existing and ultimate)
- Historic Resources (Terminal Building)
- Air Quality (potential for asbestos)
- Endangered and Threatened Species (undetermined)
- Light Emissions (MALSR)
- Compliance with Winslow's flood damage protection ordinance.

Other proposed projects which may involve the use of federal or state funds, other than FAA or ADOT-Aeronautics funds, may be subject to other permitting requirements. Plans for renovation of any building should consider the existence of asbestos or other hazardous materials.

The City of Winslow should enact airport-related ordinances to control the use of land surrounding the airport.

FINANCIAL ANALYSIS & ECONOMIC DEVELOPMENT

The Financial Analysis performed as part of the Master Plan contains two parts, the Capital Improvement Program and the Financial Program. The Capital Improvement Plan is based upon the Airport Facility Requirements presented above, as laid out in the Airport Layout Plan, which is included at the end of this Executive Summary. In addition to the recommended facility improvements, pavement maintenance costs have been programmed to provide guidance for pavement management throughout the planning period.

The Capital Improvement Program consists of (1) three terms of development: Immediate Term, 1998-2000; Short Term, 2001-2005; Ultimate Term, 2006-2018, and (2) cost estimates of improvements proposed in the Master Plan Study. The Immediate Term projects are those which are required to correct deficiencies for reasons of safety or when a feature was found to be not able to fulfill its design function at the present levels of demand. The projects in the Short and Ultimate Terms are presented in a time period as to when demand may justify development. These projects should be reviewed and moved forward as the need arises. The cost estimates, while based on approximate quantity takeoffs and unit costs, are prepared in current dollars, and are to be used for planning purposes only.

CAPITAL IMPROVEMENT PROGRAM - 1997-2018

Funding Sources: FAA, ADOT, & Sponsor

IMMEDIATE TERM 1998-2000

	Estimated Cost and Funding Source			
	Total	FAA	State	Local
1 Remove or mark obstructions to Rwy 11-29 airspace	$80,000	$72,848	$3,576	$3,576
2. Remove or mark obstructions to Rwy 4- 22 airspace	$72,000	$65,564	$3,218	$3,218
3. Install taxiway signage to restrict use of Rwy 11-29	$2,000	$1,822	$89	$89
4. Reconstruct connector taxiways adjacent to terminal area apron	$110,000	$100,166	$4,917	$4,917
5. Reconstruct terminal area apron pavements & remove part of ex. Apron	$202,000	$183,942	$9,029	$9,029
6. Construct new G.A. aircraft parking apron	141,000	128,394	6,303	6,303
7. Designate hangar development area	0	0	0	0
8. Mark temporary helicopter TLOF	$3,000	$2,732	$134	$134
Subtotal	610,000	555,468	27,266	27,266
9. Engineering & Construction Services (18% of Subtotal)	109,800	99,984	4,908	4,908
TOTAL	**719,800**	**655,452**	**32,174**	**32,174**

CAPITAL IMPROVEMENT PROGRAM - 1997-2018

Funding Sources: FAA, ADOT, & Sponsor

SHORT TERM 2001-2005

	Estimated Cost and Funding Source			
	Total	FAA	State	Local
1. Rehabilitate south G.A. apron	616,000	560,930	27,535	27,535
2. Install M.I.T.L. on taxiway parallel to Rwy 11-29	202,000	183,942	9,029	9,029
3. Install M.I.T.L. on taxiway parallel to Rwy 4-22	196,000	178,478	8,761	8,761
4, Install P.A.P.I. on Rwy 4 approach end	40,000	36,424	1,788	1,788
5. Renovate T.A.T. hangar under Historic Pres. Grant	Refer to Historic Pres. Grant Table			
6. Develop new 1,750 s.f. G.A. Terminal Building	175,000	0	157,500	17,500
7. Designate site for potential Commuter Airline Terminal	0	0	0	0
8. Crack seal and Pavement Pres. - All pavements	266,000	242,220	11,890	11,890
9. Develop taxilanes and road for hangars	179,000	0	161,100	17,900
10. Construct 12 hangars	216,000	0	0	216,000
Subtotal	1,890,000	1,201,994	377,603	310,403
11. Engineering & Construction Services (18% of Subtotal)	340,200	216,359	67,969	55,872
TOTAL	**2,230,200**	**1,418,353**	**445,572**	**366,275**

CAPITAL IMPROVEMENT PROGRAM - 1997-2018

Funding Sources: FAA, ADOT, & Sponsor

ULTIMATE TERM - 2006 -2018

	Estimated Cost and Funding Source			
	Total	FAA	State	Local)
1. Extend Runway 11-29 2,100 ft. x 150 ft.	957,000	871,444	42,778	42,778
2. Strengthen Rwy 11-29 to serve 60,000 pound SWG, ARC C-III	513,000	467,138	22,931	22,931
3. Provide instrument approach for Rwy 11 using D.G.P.S.	Unknown	Unknown	Unkwn	Unkwn
4. Mark Rwy 11 pavement for Precision Approach	20,000	18,212	894	894
5. Relocate Industrial Park Road (6,500 l.f.)	358,000	-	322,200	35,800
6. Strengthen Rwy 4-22 to serve 135,000 pound ARC C-III	788,000	717,552	35,224	35,224
7. Mark Rwy 4-22 pavement for Nonprecision Approach	15,000	13,658	671	671
8. Widen parallel taxiways from 40 ft. to 50 ft.	365,000	332,368	16,316	16,316
9. Extend Taxiway parallel to Rwy 11-29 (2,100 ft. x 50 ft.)	562,000	511,758	25,121	25,121
10. Replace Rwy 11, 29 and 22 VASI's with PAPIs	40,000	36,424	1788	1,788
11. Install MALSR on new Rwy 11 approach and extend MIRL	262,000	238,578	11,711	11,711
12. Replace or renovate REIL on Rwy 22	10,000	9,106	447	447
13. Construct 3,400 s.f. commuter airline terminal	340,000	0	306,000	34,000
14. Expand auto parking for 46 cars	9,000	0	8,100	900

	Estimated Cost and Funding Source			
	Total	FAA	State	Local)
15. Construct lighted, paved heliport	43,000	39,156	1,922	1,922
16. Acquire 117.5 acres in fee and 38.6 acres in easement for Rwy 11-29 extension	373,000	339,654	16,673	16,673
17. Acquire 26 acre easement for Rwy 29 threshold	13,000	11,838	581	581
18. Crack seal and seal coat all pavements	335,000	305,050	14,975	14,975
19. Construct 12 hangars	216,000	0	0	216,000
Subtotal	5,219,000	3,911,936	828,332	478,732
21. Engineering & Construction Services (18% Subtotal)	939,420	704,148	149,100	86,172
22. Environmental Assessment	$80,000	$72,848	$3,576	$3,576
TOTAL	**6,238,420**	**4,688,932**	**981,008**	**568,480**

CAPITAL IMPROVEMENT PROGRAM - 1997-2018
with ISTEA and AZ Heritage Fund Grant Participation

SHORT TERM 2001-2005

Element	Total Cost	AZ Heritage Fund 60/40 Grant	ISTEA 80/20 Grant	Local Funding
Renovation of T.A.T. Hangar	$172,500	$20,700	$138,000	$13,800
Engineering & Architectural and Administrative Costs (20%)	$34,500	$4,140	$27,600	$2,760
TOTAL DEVELOPMENT COSTS	**$207,000**	**$24,840**	**$165,600**	**$16,560**

FINANCIAL PROGRAM

The benefits provided by a general aviation airport to a community vary depending on many factors such as airport size, services and facilities offered, location, type and amount of air traffic and role within the overall airport system. Yet having an airport is no guarantee to its owner that it will generate positive economic impacts. General Aviation airports can become a burden when they require subsidies to operate. On the other hand, General Aviation airports that have political support for economic growth and business opportunities and which are supported by a strong local economy can contribute significantly to the economic well-being of a community.

General Aviation is the single largest segment of air transportation in the United States. General Aviation includes business, recreational and personal transportation, medical evacuation, law enforcement, firefighting, mail and express deliveries, agricultural flying, and others. Oftentimes, the success of a General Aviation airport is a matter of finding specific roles or niches within the community and in the overall airport system. Once these specific markets are identified they must be aggressively pursued.

Economically, the benefits of a General Aviation airport to a community are difficult to assess. General Aviation airports create jobs directly at the airport and indirectly within the community. They generate consumer spending and sales and personal property taxes. Growth of the airport will lead to more money being spent in the community.

The results of the detailed financial analysis are presented below. The table indicates that within the 20-year period, the City of Winslow can achieve a positive cash flow at the airport with implementation of an aggressive marketing program coupled with continued economic growth within the community.

FORECAST AIRPORT EXPENDITURES VERSUS REVENUE 1998 THROUGH 2018

	1998	2003	2008	2013	2018
Projected Annual Expenditures	663,491	917,179	1,065,977	1,109,631	1,183,505
Projected Annual Revenues	568,466	727,881	982,740	1,095,762	1,260,996
Balance	-$95,025	-$189,318	-$83,237	-$13,869	+$77,491

PREPARATION OF THE AIRPORT LAYOUT PLAN (ALP)

The Airport Layout Plan (ALP) is a set of scaled drawings that depict the existing and planned ultimate airport land and facilities. The content of the ALP drawing set is specified in FAA Advisory Circular AC 150/5300-13, Appendix 7, Airport Layout Plan Components and Preparation.

A typical ALP drawing set consists of the following components:

- Title Sheet
- Airport Layout Drawing
- Terminal Area Drawing(s)
- Runway RPZ Plan & Profile Sheets (for each runway end)
- Airport Property Map
- Airport Airspace Drawing (showing all FAR Part 77 airspace)
- Airport Land Use Drawing

The Airport Layout Plan set for Winslow-Lindbergh Regional Airport includes all of the above listed components, as well as an Airport Land Inventory & Horizontal Control Plan (Sheet 8), which includes specific horizontal and vertical control for the airport property and runway geometry, correlated to the Arizona East State Plane Coordinate system.

The Airport Layout Plan set (11 sheets) is included at the end of this section for reference, in a reduced size format (11"x 17"). The full size (24" x 36") drawings are considered to be the official ALP, and a part of this Master Plan document.

Major Planning Features of the Winslow ALP

The Airport Layout Plan (ALP) for the Winslow-Lindbergh Regional Airport was developed to serve as a flexible planning tool that can be used by the City to decide upon various courses of action as local and regional demographic, economic and aviation industry changes occur. It is important to understand that the ultimate features of the ALP *may or may not be developed*, depending upon the actual demand that occurs based on these factors.

The ALP features the following major elements, dictated by current operational requirements and the forecast demand levels, as well as possible specific future events that might require development of specific infrastructure:

- The terminal area has been planned such that a separation can be made between the U.S. Forest Service operations of large C-130 class aircraft and operations by lighter general aviation aircraft. This has been accomplished by planning for the removal of a portion of the existing paved parking apron, and replacing it with a separate apron, removed from the U.S.F.S. operations area. The result is a "buffer" area between U.S.F.S. activities and those of the lighter aircraft types. A blast fence between the U.S.F.S. and light aircraft aprons is also included to provide protection from propeller and jet blast during runups of the larger aircraft.

- The curved parallel taxiway adjacent to the existing terminal area is planned to be straightened in the future, based on the Planning Advisory Committee's decision. This will necessitate removal and replacement of the Terminal and Restaurant buildings. In the short term, however, the buildings will remain in use and large aircraft will be restricted from use of the curved section of taxiway by rerouting them back to the runway with additional guidance signage, via a new connector taxiway (ultimate Taxiway C).

- The terminal area layout also provides for separation between general aviation/U.S.F.S. operations and the possible future commuter airline activity. A separate site for ultimate development of an airline terminal and related FBO services has been planned. This is located adjacent to the currently little-used South G.A. Apron.

- The plan includes design for the ultimate extension of Runway 11-29 as much as 2,100 feet to the northwest. This will provide adequate runway length to accommodate summertime use by larger business and air carrier aircraft, such as the Learjet 55C (at 21,500 pound takeoff weight), the Sabreliner NA-265-80A (at its gross 25,500 pound takeoff weight), the DC-9-12 (at 79,500 pound takeoff weight) and the Boeing 737-200 (at somewhat reduced operating weights, up to about 90,000 pounds). Extension to the northwest will also allow movement of the Runway 29 threshold to the northwest and away from the existing Head Start school and residential area.

- Ultimate development for Runway 11-29 also includes installation of a "precision" approach to Runway 11. This is based on the assumption that these approaches will be much more economically feasible with the full implementation of the Global Positioning System (GPS). It is important to note that, because of the wider Primary Surface requirement for the precision approach, many structures in the terminal area would penetrate FAR Part 77 surfaces. These would need to be lighted or removed. The actual instrument approach visibility and/or decent minimums that would be achievable would probably be higher because of the existence of these obstructions. The "standard" precision approach minimums with no obstructions is decent to 200 feet AGL and ½ mile visibility. A precision approach with Primary Surface penetrations may be to only 300-400 feet AGL and ¾ or even one mile visibility.

Modifications to Current FAA Standards

All airport development carried out at Federally obligated airports (generally those which have received federal funding assistance grants within the past twenty years) must be done in accordance with an FAA-approved ALP. The improvements shown on the ALP must conform to the FAA design standards that existed at the time of plan approval, unless specific waivers are granted.

Because of changes in certain FAA design criteria over the years, and the change in the

ultimate role of the Winslow airport, several areas of noncompliance are in existence. These include the following:

1. The existing buildings in the terminal area do not comply with current Runway Visibility Zone (RVZ) requirements, as contained in AC 150/5300-13, Par. 503, Line of Sight Standards. A Building Restriction Line (BRL) has been established which allows these buildings to remain, but ensures that no new construction will occur that will impact the RVZ in the future.

2. The existing Terminal Building is located within the Taxiway Object Free Area (OFA). This is in nonconformance with AC 150/5300-13, Par. 404, Taxiway and Taxilane OFA. Although this building is scheduled to be removed in the ultimate term, a design waiver will be required in the meantime.

3. The existing parallel taxiway separations from the runways do not comply with the standards contained in AC 150/5300-13, Par. 209., Runway to Parallel Taxiway and Taxilane Separation.

These items are noted on the Airport Layout Drawing. The review and approval process by the FAA will include a determination regarding the acceptability of the departures from standard criteria.

AIRPORT LAYOUT DRAWING
WINSLOW-LINDBERGH REGIONAL AIRPORT
Winslow, Arizona

SHEET 2 OF 11

DATE OF DRAWING: JULY 1, 1998

PLANNER: 07/01/98

ENGINEER: 07/01/98

RUNWAY DATA TABLE

	RUNWAY 11–29		RUNWAY 4–22	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
DESIGN CATEGORY (ARC)	ARC C–II (e)	ARC C–III (f)	ARC C–II (e)	ARC C–III (f)
RUNWAY DIMENSIONS (g)	7,099' X 150' (h)	8,699' X 150'	7,499' X 150'	7,499' X 150'
RUNWAY TRUE BEARING	N 60°00'24" W	N 60°00'24" W	S 58°55'08" W	S 58°55'08" W
PAVEMENT STRENGTH	60,000# SWG (a)	110,000# DWG (b)	50,000# SWG (a)	110,000# DWG (b)
RUNWAY SAFETY AREA (RSA) (g)	9,499' X 500'	10,699' X 500'	9,499' X 500'	9,499' X 500'
RSA LENGTH BEYOND RUNWAY END	1,000'	1,000'	1,000'	1,000'
OBJECT FREE AREA (OFA)	800'W X 1,000'L	800'W X 1,000'L	800'W X 1,000'L	800'W X 1,000'L
OBSTACLE FREE ZONE (OFZ)	400'W X 200'L	400'W X 200'L	400'W X 200'L	400'W X 200'L
RUNWAY LIGHTING	MIRL	MIRL	MIRL	MIRL
RUNWAY MARKING	NONPRECISION	PRECISION	NONPRECISION	NONPRECISION
EFFECTIVE GRADIENT (%)	0.61%	0.61%	0.60%	0.60%
TYPE OF APPROACH	1 MILE	<3/4 MILE	1 MILE	1 MILE
APPROACH SLOPES	11=34:1 29=34:1	11=50:1 29=34:1	4=34:1 22=34:1	4=34:1 22=34:1
MAXIMUM ELEVATION ABOVE MSL	4896.72	4925.0	4938.75	4938.75
RUNWAY NAVAIDS AND VISUAL AIDS	VASI(11/29),REIL(11)	MALSR, PAPI, DGPS	VASI (22),REIL(22)	PAPI & REIL (4/22)
FAR PART 77 CATEGORY (c)	11=NP / 29=NP	11=P / 29=NP	4=NP / 22=V	4=NP / 22=NP
WIND COVERAGE (13/16 KNOT) (d)	93.48%/96.86%		97.66%/99.18%	
WIND COVERAGE (10.5 KNOT) (d)	89.93%		95.88%	

(a) SWG = SINGLE WHEEL GEAR
(b) DWG = DUAL WHEEL GEAR
(c) P=Precision(GPS) /NP=Nonprecision(VOR/GPS) /V=Visual
(d) 10.5 KNOTS = 12 MPH / 13 KNOTS = 15 MPH
(e) EXISTING CRITICAL AIRCRAFT = GULFSTREAM III
(f) ULTIMATE CRITICAL AIRCRAFT = BOEING 737–200
(g) LENGTHS ARE ROUNDED TO NEAREST FOOT
(h) TOTAL PAVEMENT LENGTH IS 7,498'

NOTE: ALL RUNWAYS AND TAXIWAYS ARE OF ASPHALTIC CONCRETE CONSTRUCTION.

MODIFICATIONS TO CURRENT FAA STANDARDS

1. EXISTING BUILDINGS IN TERMINAL AREA DO NOT COMPLY WITH CURRENT RUNWAY VISIBILITY ZONE REQUIREMENTS (AC 150/5300–13, PAR. 503. LINE OF SIGHT STANDARDS).
2. EXISTING TERMINAL BUILDING IS WITHIN THE TAXIWAY OBJECT FREE AREA (OFA) (AC 150/5300–13, PAR. 404. TAXIWAY AND TAXILANE OFA).
3. EXISTING PARALLEL TAXIWAY SEPARATIONS DO NOT COMPLY WITH CURRENT STANDARDS (AC 150/5300–13, PAR. 209. RUNWAY TO PARALLEL TAXIWAY AND TAXILANE SEPARATION).

LEGEND

EXISTING	ULTIMATE	
		PROPERTY LINE
	N.A.	LEASED AREAS
		PAVEMENT EDGES
	N.A.	PAVEMENT EDGES – ORIGINAL AIRFIELD (ABANDONED)
		BUILDING
		RUNWAY OBJECT FREE AREA (OFA)
5:2	OFZ	RUNWAY OBSTACLE FREE ZONE (OFZ)
		RUNWAY PROTECTION ZONE (RPZ)
		AIRPORT REFERENCE POINT (ARP)
	R	ROTATING BEACON
W T	W	WIND CONE OR TEE
	N.A.	TREES AND BRUSH
		VISUAL APPROACH PATH INDICATOR (PAPI,VASI)
	N.A.	SWAMP (WETLANDS)
		FENCE
	N.A.	ANTENNA
	N.A.	POWER POLES
	N.A.	LIGHT POLES
RSA	RSA	RUNWAY SAFETY AREA (RSA)
895	N.A.	GROUND CONTOURS
		EASEMENTS
BRL	BRL	BUILDING RESTRICTION LINES (BRL)
RVZ	RVZ	RUNWAY VISIBILITY ZONE (RVZ)
		RUNWAY THRESHOLD AND EDGE LIGHTING

NOTE: ALL LATITUDE/LONGITUDE COORDINATES ARE NORTH AMERICAN DATUM OF 1983 (NAD83).

GRAPHIC SCALE IN FEET
0 500 1,000 1,500
1" = 500'

MAGNETIC DECLINATION
12°16.8' E (JULY, 1998)
ANNUAL RATE OF CHANGE=0.96' W
(CALCULATED WITH DEFENSE MAPPING AGENCY "GEOMAG" PROGRAM)

NOTE
SEE SHEET 3 FOR DETAILS OF THE TERMINAL AREA

THE CONTENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS DOCUMENT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN, NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

FAA APPROVAL

APPROVED _____ City of Winslow Date _____

APPROVED _____ Planning Advisory Committee Date _____

No.	BY	DATE	CHANGE
7			
6			
5			
4			
3			
2			
1			

REVISIONS

Prepared by:
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